

WHAT IS CLAIMED IS:

- 1 1. A head driving device of a liquid ejecting apparatus, comprising:
2 a liquid ejecting head, formed with a nozzle orifice from which a liquid
3 droplet is ejected;
4 a driving signal generator, generating a driving signal;
5 a pressure generating element, applying pressure to liquid based on
6 the driving signal for ejecting the liquid droplet;
7 a charge element, charged at a reference voltage lower than a drive
8 voltage for driving the pressure generating element, and applying a bias
9 voltage to the pressure generating element; and
10 a discharge circuit, discharging a charge on the charge element to a
11 ground when a voltage of the charge on the charge element is equal to or
12 higher than a first voltage which is higher than the bias voltage.

- 1 2. The head driving device as set forth in claim 1, wherein the discharge
2 circuit includes a switching element connected between the charge element
3 and the ground; and
4 wherein the switching element is turned on when the voltage of the
5 charge on the charge element is equal to or higher than the first voltage.

- 1 3. The head driving device as set forth in claim 2, wherein the switching
2 element includes a transistor, the base of which is connected to a reference
3 voltage source, the emitter of which is connected to the charge element and
4 the collector of which is grounded.

1 4. The head driving device as set forth in claim 3, wherein a current
2 limiter resistor is connected in series between the collector of the charge
3 element and the ground.

1 5. The head driving device as set forth in claim 1, further comprising an
2 abnormal voltage detector, outputting a detection signal when the voltage of
3 the charge on the charge element reaches a second voltage higher than the
4 first voltage.

1 6. The head driving device as set forth in claim 3, wherein the transistor
2 is a FET.

1 7. The head driving device as set forth in claim 1, wherein the pressure
2 generating element is a piezoelectric element.

1 8. The head driving device as set forth in claim 1, wherein the charge
2 element is a capacitor

1 9. A method of discharging a charge on a charge element of a head
2 driving device of a liquid ejecting head, comprising the steps of:

3 ejecting a liquid droplets based on a driving signal by applying
4 pressure to liquid;

5 charging a charge element at a reference voltage lower than a drive
6 voltage for ejecting the liquid droplet;

7 applying a bias voltage to a pressure generating element by the

8 charge on the charge element; and
9 discharging the charge on the charge element to a ground when a
10 voltage of the charge on the charge element is equal to or higher than a first
11 voltage which is higher than the bias voltage.

1 10. The method as set forth in claim 9, further comprising the steps of:
2 detecting whether the voltage of the charge on the charge element
3 reaches a second voltage higher than the first voltage; and
4 outputting a detection signal based on a result of the detecting step.